

What is claimed is:

1. A micromachine package comprising:

a first chip,

a second chip having a plurality of pads disposed on one side of the second chip;

6 at least one moveable structure disposed on one of the first chip and the second chip;

at least one electrode for cooperating with the moveable structure and disposed on one of the first chip and the second chip,

a spacer ring disposed between the first chip and the second chip and surrounding the moveable structure;

a plurality of bumps disposed on the pads;

12 a plurality of leads each defining a first lead surface connected to the bump, and an opposite second lead surface; and

an encapsulant encapsulating the first chip, the second chip, the spacer ring, the bumps, and the first lead surfaces of the leads, wherein the second lead surfaces of the leads are exposed out of the encapsulant.

2. The micromachine package as claimed in claim 1, further comprising:

18 a die pad defining a first die-pad surface and an opposite second die-pad surface, wherein the first die-pad surface is connected to the first chip and the second die-pad surface is exposed out of the encapsulant.

3. The micromachine package as claimed in claim 2, further comprising:

an adhesive for attaching the first chip to the die pad.

24 4. The micromachine package as claimed in claim 1, wherein the second lead surfaces of the leads are flush with the encapsulant.

5. The micromachine package as claimed in claim 1, further comprising a plurality of solder balls for electrically connecting the first chip to the second chip.

6. The micromachine package as claimed in claim 1, wherein the bump is a gold bump.

7. The micromachine package as claimed in claim 1, wherein the bump is a solder bump.

8. A micromachine package comprising:

a lid;

6 a chip having at least one moveable structure and a plurality of pads disposed on one side of the chip;

a spacer ring disposed between the lid and the chip and surrounding the moveable structure;

a plurality of bumps disposed on the pads;

a plurality of leads each defining a first lead surface connected to the bump, and an opposite second lead surface; and

12 an encapsulant encapsulating the lid, the chip, the spacer ring, the bumps, and the first lead surfaces of the leads, wherein the second lead surfaces of the leads are exposed out of the encapsulant.

9. The micromachine package as claimed in claim 8, further comprising:

18 a die pad defining a first die-pad surface and an opposite second die-pad surface, wherein the first die-pad surface is connected to the lid and the second die-pad surface is exposed out of the encapsulant.

10. The micromachine package as claimed in claim 9, further comprising:

an adhesive for attaching the lid to the die pad.

11. The micromachine package as claimed in claim 8, wherein the second lead surfaces of the leads are flush with the encapsulant.

24 12. The micromachine package as claimed in claim 8, wherein the bump is a gold bump.

13. The micromachine package as claimed in claim 8, wherein the bump is a solder bump.

14. A micromachine package comprising:

a lid having a plurality of pads disposed on one side of the lid;

a chip having at least one moveable structure;  
a plurality of solder balls for electrically connecting the chip to the lid;  
a spacer ring disposed between the lid and the chip and surrounding the moveable structure;

a plurality of bumps disposed on the pads;

6 a plurality of leads each defining a first lead surface connected to the bump, and an opposite second lead surface; and

an encapsulant encapsulating the lid, the chip, the spacer ring, the bumps, and the first lead surfaces of the leads, wherein the second lead surfaces of the leads are exposed out of the encapsulant.

15. The micromachine package as claimed in claim 14, further comprising:

12 a die pad defining a first die-pad surface and an opposite second die-pad surface, wherein the first die-pad surface is connected to the chip and the second die-pad surface is exposed out of the encapsulant.

16. The micromachine package as claimed in claim 15, further comprising:

an adhesive for attaching the chip to the die pad.

17. The micromachine package as claimed in claim 14, wherein the second lead surfaces of the leads are flush with the encapsulant.

18. The micromachine package as claimed in claim 14, wherein the bump is a gold bump.

19. The micromachine package as claimed in claim 14, wherein the bump is a solder bump.

20. A method for manufacturing a plurality of micromachine packages,  
24 comprising the following steps of:

providing a first wafer which comprises a plurality of first chips each having at least one moveable structure and a plurality of pads disposed on one side of the first chip, and a plurality of scribe lines disposed between the chips;

forming a plurality of spacer rings individually on the first chips of the first wafer for surrounding the moveable structures;

providing a lid substrate which comprises a plurality of lids, and a plurality of scribe lines disposed between the lids;

attaching the lid substrate on the spacer rings for forming a cavity between the first chip and the lid and receiving the moveable structure;

6 cutting the wafer and the lid along the scribe lines of the wafer and the scribe lines of the lid substrate for forming a plurality of combined chips;

forming a plurality of bumps on the pads;

providing a lead frame stripe which is provided with a plurality of lead frames each having a plurality of leads defining first lead surfaces and opposite second lead surfaces;

12 disposing the combined chips on the lead frames and connecting the bumps to the first lead surfaces of the leads; and

molding a plurality of encapsulants each encapsulating the first chip, the lid, the spacer ring, the bumps, and the first lead surfaces of the leads, wherein the second lead surfaces of the leads are exposed out of the encapsulants.

18 21. The method as claimed in claim 20, wherein the lead frame is further provided with a die pad defining a first die-pad surface and an opposite second die-pad surface, the first die-pad surface is connected to the lid and the second die-pad surface is exposed out of the encapsulant.

22. The method as claimed in claim 21, further comprising the steps of:

applying an adhesive on the die pad; and

attaching the lid to the die pad.

24 23. The method as claimed in claim 20, wherein the lid substrate is a second wafer and the lids are second chips, and each second chip has at least one electrode for being cooperated with the moveable structure of the first chip and a plurality of pads disposed on one side of the second chip.